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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,457	11/12/2003	John G. Edelen	2003-0434.02	6755

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EXAMINER

NGUYEN, LAM S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 05/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/706,457	EDELEN ET AL.	
	Examiner	Art Unit	
	LAM S. NGUYEN	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

Claim 9 is objected to because of the following informalities: The claim recites "the semiconductor substrate" without sufficient antecedent basis. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-2, 4-8, 13-14, 16-20, 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa (US 6474782) in view of Lambertson (US 5544103).

#### **Referring to claims 1, 13, 23:**

Furukawa disclose an ink jet printhead having a substrate (*FIG. 11, element H1100*) for a micro-fluid ejecting device, the substrate comprising:

a plurality of fluid ejection devices (*FIG. 11, elements HEATER ARRAY*);

a plurality of driver devices (*FIG. 11, elements DRIVER*) for driving the plurality of fluid ejection devices;

a nonvolatile memory (*column 13, lines 20-21*) being capable of being operatively connected to the micro-fluid ejecting device for storing information for operation of the micro-fluid ejecting device (*column 13, lines 20-27: The information is heater resistance values, for example*) and directly readable by a controller (*Fig. 11, element 122*).

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wherein the printhead is attached to a cartridge body having an ink supply source (*FIG. 4*), wherein the printhead is in fluid communication with the ink supply source and also has a nozzle plate (*FIG. 5, elements H1100 and H1100T*) attached to the substrate for ejecting ink therefrom upon activation of the ink ejection devices (**Referring to claim 13**).

Furukawa, however, is silent wherein the memory is a matrix containing embedded programmable memory devices embedded in a silicon semiconductor and comprises transistors selected from the group consisting of PMOS and NMOS floating gate transistors (**Referring to claims 2, 4, 14, 16, 26-28**), wherein the embedded programmable memory devices are programmable by applying a voltage of greater than about 8 volts for at least about 100 microseconds (**Referring to claims 6, 18**), wherein the memory matrix comprises more than 128 memory devices (**Referring to claims 5, 17**).

Lambertson discloses an integrated circuit memory matrix having more than 128 programmable memory devices (cells) (*column 1, lines 9-15 and column 39, lines 57-63*), embedded in a silicon semiconductor (*column 1, lines 17-18 and column 3, lines 64-68*), wherein each programmable memory device (cell) including transistors selected from the group consisting of PMOS and NMOS floating gate transistors (*FIG. 3 and column 18, lines 5-15*), wherein the embedded programmable memory devices are programmable by applying a voltage of greater than about 8 volts for at least about 100 microseconds (*column 18, lines 21-47: During programming process, the voltage on the floating gate is 7-10V; column 35, lines 40-45: The time programming is from 2-200 microseconds*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to make the memory in the printhead disclosed by Furukuwa by the floating-

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gate programmable memory device as disclosed by Lambertson. The motivation for doing so would have been to enable the density of memory cells to be increased as taught by Lambertson (*column 1, lines 10-14*).

- **Referring to claims 7-8, 19-20:**

Furukuwa is also silent wherein the embedded programmable memory devices will pass from about 10 to about 200 microamps of current at about 2 volts in a programmed state and less than 3 microamps of current in an unprogrammed state.

Lambertson however also teaches that the memory device passes a current of 1-4mA under the voltage of 7-10V (*column 35, lines 62-67*) at the programmed state. Thus, at the voltage is about 2V, the current is about 0.3-0.8mA (300-800 microamps). During the unprogrammed state the current is less than 3 microamps (*column 35, lines 47-52: 0.5-5 nanoamps*).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to lower the current during the programmed state, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

2. Claims 9-12, 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa (US 6474782) in view of Lambertson (US 5544103), as applied to claims 1 and 13, and further in view of Axtell et al. (US 6439697).

Furukawa, as modified discloses the claimed invention as discussed above and Lambertson also teaches that it is well known in the art the memory matrix can be erasable by ultraviolet light (*column 1, lines 50-55*).

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Furukawa, as modified, however is silent a layer disposed adjacent the programmable memory matrix and comprises a material selected from the group consisting of a photoresist material, and a metal layer, said layer having ultraviolet light blocking properties, said layer having properties sufficient to block ultraviolet light having a wavelength below about 400 nanometers and a polyimide nozzle plate.

Axtell discloses an ink jet printhead including a memory and a layer (*FIG. 1, elements 12-13*) disposed adjacent the memory and comprising a material selected from the group consisting of a photoresist material, and a metal layer, said layer having ultraviolet light blocking properties, said layer having properties sufficient to block ultraviolet light having a wavelength below about 400 nanometers and a polyimide nozzle plate (*FIG. 1, element 13 and column 4, lines 19-45: A plate of nickel or polymer material can block ultraviolet light having a wavelength below about 400 nanometers*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the printhead disclosed by Furukawa, as modified, to the layer having ultraviolet blocking properties as disclosed by Axtell et al. The motivation for doing so would have been well known in the art for protecting the memory from being erasable by ultraviolet light.

3. Claims 3 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa (US 6474782) in view of Lambertson (US 5544103), as applied to claims 1 and 13, and further in view of Thakoor et al. (US 4876668).

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Furukuwa, as modified, discloses the claimed invention as discussed above but is silent wherein the embedded programmable memory devices have a memory density of greater than about 200 bits per square millimeter.

Thakoor et al. discloses a programmable memory having a plurality of memory cells arranged in a density of greater than about 200 bits per square millimeter (*column 5, lines 63-68: Density of 10 bits/cm<sup>2</sup> is the same as 10 bits/mm<sup>2</sup>*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the memory devices disclosed by Furukuwa, as modified, to having a density greater than 200 bits per square millimeter as disclosed by Thakoor et al. since it has been held as well known in the art that the higher density would reduce the packing size of the memory or increase the capacity of the memory.

#### ***Response to Arguments***

Applicant's arguments with respect to claim 1 and 13 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S. NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D. MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN  
04/27/2006

  
**STEPHEN MEIER**  
**SUPERVISORY PATENT EXAMINER**